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# **Soil and Water Conservation News**

United States Department of Agriculture  
Soil Conservation Service



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## Comments: From the SCS Chief

### Cooperation Keeps Conservation Tillage Growing

Farmers used some form of conservation tillage on nearly 100 million acres in 1985, just about one of every three acres planted in crops. Supporting their efforts are the U.S. Department of Agriculture's Agricultural Research Service (ARS), Cooperative State Research Service, Extension Service, Agricultural Stabilization and Conservation Service, and Soil Conservation Service as well as conservation districts and private industry.

Experience shows that all forms of conservation tillage don't work equally well everywhere, and when row-crop farmers in the Central United States had reduced yields under no-till on their heavy, poorly drained soils, agricultural scientists, coupled with private industry and interested farmers, went to work on the problem.

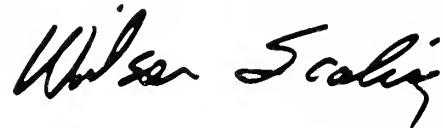
The result was another form of conservation tillage, ridge-till, which produces competitive yields in these areas. The seed is planted in a raised ridge where the soil can dry out and warm up sooner in the growing season.

Farmers really like ridge-till: The Conservation Tillage Information Center in Ft. Wayne, Ind., a special project of the National Association of Conservation Districts, reports that in 1985 there was a 45-percent rate of growth in the practice. More than 75 percent of that increase was in the Corn Belt and Northern Plains States.

Agricultural researchers are continuing to develop the information farmers need for choosing the best conservation tillage system for their soil, increasing the effectiveness of fertilizer through proper placement, and improving weed control. Extension is doing a good job of getting this information to farmers.

Research shows that applying more herbicides does not necessarily provide better weed control. ARS scientists and scientists at State agricultural experiment stations say that adequate weed control requires a combination of crop rotations, proper timing, and the right herbicide. This means that careful management can reduce the amount of potentially harmful herbicides introduced into the environment as well as cut costs.

SCS field people who are directly helping farmers fine tune their conservation tillage systems need to keep track of the latest research results about soils, climate, crops, and other conditions in their area. Together, we can make sure that farmers and ranchers get the accurate, up-to-date information and expert assistance they need to manage these soil-saving systems well—and we can relay their questions and good ideas to research scientists.



**Cover:** Low-cost, energy efficient house built with local lumber in north-central New York. This house is one of the models for a new building kit being developed by the Black River-St. Lawrence Resource Conservation and Development (RC&D) Area. Articles about this and other RC&D projects begin on page 3. (Photo by Karen Rusinski, audio-visual production specialist, SCS, Syracuse, N.Y.)

Richard E. Lyng  
Secretary of Agriculture

Wilson Scalling, Chief  
Soil Conservation Service

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## RC&D: Making Things Happen

The Resource Conservation and Development (RC&D) Program is a Federal rural development program that is run by the people who live in the areas it serves. Priorities for the program are set not by the Federal Government but by the men and women who are experiencing the problems firsthand.

The RC&D Program was established by the Food and Agriculture Act of 1962. This act authorizes the U.S. Department of Agriculture (USDA) to help local units of government to conserve and properly use natural resources in solving local problems. It assigns the leadership role to the Soil Conservation Service.

Each RC&D area usually covers several counties and is run by a council representing the sponsoring organizations—county governments, soil and water conservation districts, towns, water districts, and other nonprofit groups. Council members commonly include farmers, ranchers, bankers, politicians, homemakers, environmentalists, and others who are volunteering their time to solve local problems.

RC&D councils have broad authority to seek help from the sources they feel are best qualified to provide the needed assistance. The help may be technical assistance from USDA agencies, the State government, local governments, local conservation districts, or private industry. It may be financial assistance in the form of donations, loans, grants, or cost-sharing programs.

The council in each area is assisted by an RC&D coordinator, a USDA employee whose job is to "make things happen." This person is a planner, proposal writer, negotiator, innovator, motivator, creator, expediter, and whatever else the council needs. The coordinator is a troubleshooter who may work odd hours, traveling to meet key people to keep projects on schedule.

In many areas, one of the main RC&D goals is to improve the local economy by the wise development and use of local resources. This is done in many different ways, such as by developing wood products industries in areas with an abundance of forest land, promoting tourism in scenic areas, or setting up cooperatives for marketing livestock. Other RC&D goals may be to improve the quality of life or conserve natural resources.

Next year will mark 25 years of RC&D activities. This is the first part in a two-part series of articles about some of the ways the RC&D Program has "made things happen" in rural communities across the Nation. This part highlights economic development. The second part will concentrate on RC&D activities to improve the quality of life and conserve natural resources.

**Ron Page,**  
national RC&D coordinator, SCS, Washington, DC

### Building a New Housing Industry

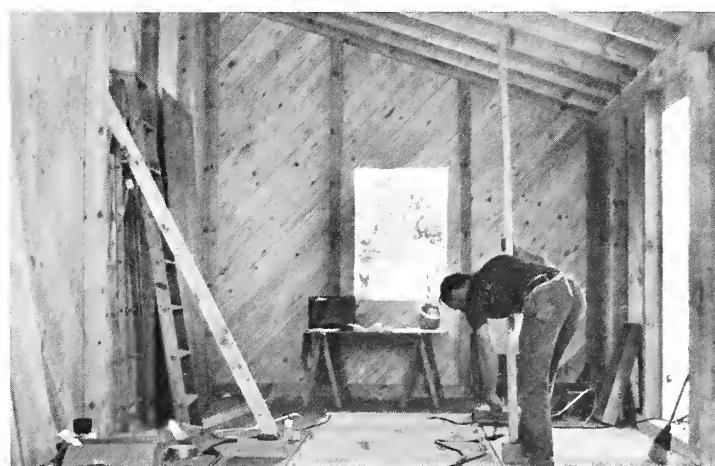
In north-central New York, the RC&D Program is helping to build a new industry based on the area's abundant forest resources and pressing need for housing. The Forestry Committee of the Black River-St. Lawrence RC&D Area is laying the groundwork for a pre-cut-and-packaged post-and-beam house kit industry.

The RC&D area encompasses 2.7 million acres of commercial forest land and about 90,000 households in Franklin, Jefferson, Lewis, and St. Lawrence Counties. Only half the annual growth of wood is harvested each year, and most of this is exported from the area as raw wood products, such as logs, pulpwood, or rough-cut unseasoned lumber. Rural housing in most of the RC&D area is old, underinsulated, and in general disrepair.

About 5 years ago, the St. Lawrence Housing Council began a project to improve the housing in St. Lawrence County. The Housing Council thought that one answer might be a design for a post-and-beam-style house (a traditional building style throughout the area) with a modern insulation package.

The Housing Council began designing small houses and trailer add-on units to be built with a combination of owner and Housing Council labor. All the designs incorporated modern, simplified construction methods to make it easier for owner-builders to erect the homes. The building materials were to be inexpensive, locally milled, rough-cut, unseasoned lumber.

The RC&D Forestry Committee saw the Housing Council's program as a basis for a new wood-using industry that would generate more dollars and jobs for the local economy. The Housing Council's model homes were proving to be attractive, sturdy, extremely energy efficient, and low maintenance. The homes were



An employee of the St. Lawrence Housing Council prepares to install a bathroom in an add-on unit being built alongside a house trailer. Housing designs by the council incorporate modern, simplified construction methods and call for the use of local lumber.

Photo by Karen Rusinski, audio-visual production specialist, SCS, Syracuse, N.Y.

inexpensive, and new owners were pleased with them.

The Housing Council estimated that a post-and-beam home built with locally milled, rough-cut lumber would cost about \$30,000 if built by a contractor, exclusive of land and site preparation. With owner-supplied labor, the cost would drop to about \$23,000. The lowest price quoted by an existing post-and-beam house kit manufacturer was \$40,000, and that kit had only half the insulation R-value of the Housing Council homes. Most kits sell for \$50,000 or more.

Encouraged by these figures, the Forestry Committee decided to provide technical and financial assistance if a private entrepreneur could be found to produce and sell the kits. This assistance is to include a design package, market study, and business plan.

To launch the project, the committee secured three grants. A total of \$35,700 came from USDA's Forest Service in two grants administered by the New York State Department of Environmental Conservation's Division of Lands and Forests. Another \$10,000 came from the Adirondack North Country Association, a public interest group that promotes economic development in New York's North Country.

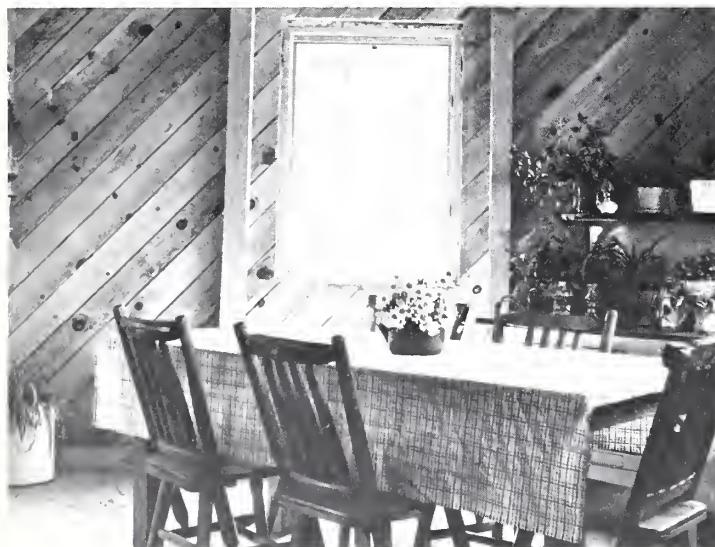
The design package includes blueprints, materials lists, construction costs and

techniques, and other technical information. The market study will determine the market potential for the home kit and identify secondary products, such as barns, sheds, additions, and playground sets, that could improve the profitability of the venture. The business plan will analyze start-up costs, growth potential, existing competition, promotional and sales techniques, overall profit potential, and other considerations.

All of this material will be public information, available to all prospective entrepreneurs to use and study. The committee has reserved \$5,000 to help one carefully selected entrepreneur get started. This prospect will be selected by the committee as the one most likely to succeed with the project.

Throughout the project, the State of New York has provided continuous support through its Department of Environmental Conservation's Forest Products Utilization and Marketing Section. The State was also cooperative in revising regulations against the use of informally graded lumber that could have stymied the project. This was the traditional building material used for generations in rural homes, and is the same lumber called for in the post-and-beam kit design.

**Tony Esser,**  
RC&D coordinator, SCS, Watertown, N.Y.



Housing for a family of four is provided by this post-and-beam style house designed by the St. Lawrence Housing Council. The family moved from a house trailer and plans to finish the floor and window casings later. Two layers of sheet insulation are between the interior and exterior walls.

Photo by Karen Rusinski,  
audio-visual production  
specialist, SCS, Syracuse,  
N.Y.

## Converting Sawdust to Gas

Sawdust—a troublesome waste product of the sawmill industry—has become an asset for southeastern Missouri.

With assistance from the Bootheel RC&D Council, a 700-million-BTU wood gasification plant has been built near Bloomfield to convert sawdust into clean-burning gas. The Alternative Gas Company of Washington, DC, buys the sawdust, converts it into gas, and sells the gas to a cat litter manufacturer.

The gasification plant consumes about 20 trailer loads (200 tons) of sawdust a day. The RC&D council helped locate enough sources of sawdust to satisfy this demand for years to come. One source was a 150-foot-high pile that was causing a serious pollution problem on the Current River, a recreational stream about 60 miles to the west.

The gas meets or exceeds all local and Federal pollution standards and saves the consumer 20 percent (\$2,000 per day) in energy costs. It burns in a leaner mixture than natural gas and creates virtually no sulfur or heavy metal byproducts that get into the air.

The gasification plant, which is adjacent to the cat litter manufacturer, operates by blasting a mix of sand and sawdust into an oxygen-starved environment at 1,200 to 1,300 degrees Fahrenheit. This produces carbon monoxide and hydrogen, about 90 percent of which is recovered to fire the kilns that dry the clay used in the cat litter.

This new use for sawdust has brought new industry to the area. It is also helping sawmills to properly dispose of their sawdust without polluting the surface and groundwater, which should keep more of the sawmills in business and more jobs in the area.

**James E. Callahan,**  
RC&D coordinator, SCS, Dexter, Mo.

## Linking New England and the Canadian Maritimes

Washington is Maine's most eastern county. It is a sparsely settled link between New England and the Canadian Maritimes.

The county covers 2,915 square miles and is dotted with small, peaceful towns rich in history and beauty. The land is 90-percent forested, and the major economic sources are wood-using industries, a wild blueberry industry, and hunting and coastal fishing.

This Down East Maine coastal county is served by three major highways, and many tourists visit areas nearby. To the south are popular Mount Desert Island and Acadia National Park. To the east are Campobello Island, with Roosevelt Campobello International Park, and the Canadian Maritimes. Local citizens feel that much can be done to attract tourists to Washington County as well.

In the summer of 1984, a tourism subgroup of the Governor's Task Force on the Economy of Washington County came to the Down East RC&D Area Council for help in developing tourism. The two groups agreed to publish information about the county's attractions and facilities and to revitalize an indebted and inactive local chamber of commerce.

The RC&D council and the Washington County Regional Planning Commission developed a questionnaire and distributed a copy of it to a key person in each municipality to obtain basic tourist information.

Once compiled, the information on lodging places, eating places, campgrounds, park and picnic facilities, boat access sites, trails, historical sites, entertainment, scenic views, sporting highlights, and other points of interest was published in a 150-page tourist guide. Copies of the guide—as well as posters and displays—were distributed to tourism organizations statewide.

Meanwhile, the Governor's task force subgroup arranged for three major creditors to clear the financial obligations of the former chamber of commerce. A new Washington County Chamber of Commerce with a new board of directors is now functioning, and enthusiasm is high for developing tourism.

**Thomas C. Sweetser,**  
RC&D coordinator extension agent,  
SCS, Cherryfield, Maine

## Trying New Crops in Iowa

Iowans are well known for their ability to produce crops. Yet they import 80 to 90 percent of the fruits and vegetables they eat.

This reflects a dramatic change from the year 1919, when Iowa ranked fifth in the United States in commercial vegetable production. Up until the 1940's, the State ranked seventh in number of canneries. Today it's difficult to find a cannery in Iowa.

"Those statistics say to me that something other than corn and soybeans can be grown, and grown well, in Iowa," said Ric Zarwell, RC&D coordinator with SCS in Burlington.

"It's mostly that many other crops haven't been tried in a big way. In the RC&D area here, we believe a profitable agriculture is a prerequisite for good soil and water conservation," Zarwell said. "So, knowing there is an overproduction of corn and soybeans, we're helping people in the four-county Geode Wonderland RC&D Area look at alternative crops."

The idea was spawned a year ago as the depressed agricultural economy worsened. "We really got to thinking about alternative crops seriously last year, after the RC&D council sponsored seminars on growing shiitake (pronounced she-tah-kay) mushrooms. More than 1,200 people attended those seminars, and the interest was tremendous," Zarwell said. He added that 340 people became growers of the popular, edible mushroom last year, ordering 980,000 "plugs" to insert into small logs to begin their ventures.

"We'll have four meetings this year, too. We're bringing in an expert from California with the latest Japanese technology on growing the mushroom, and we expect to be swamped with interest again this year," Zarwell said.

The shiitake mushroom experience led to more thoughts on "new" crops. In Henry County, with RC&D help, seven farmers grew catfish in their farm ponds and then sold them locally. The farmers bought the catfish at a 6-ounce, fingerling size in late May, placed them in floating cages 4 feet deep and 3 feet in diameter, and fed them pellets daily. By the beginning of Septem-

ber, the catfish were 1½ to 2 pounds and ready to sell.

"The farmers sold them live or dressed at a local farmer's market and at the Old Thresher's Reunion celebration, and they plan to do it again next year," said Zarwell. "Catfish farming isn't new, but this idea of fast growth in cages is new to Iowa."

This past November, the RC&D council sponsored the first Agricultural Diversification Exposition in Iowa. The 2-day seminar, which is now planned as an annual event, drew 400 people. Workshops covered such topics as catfish, popcorn, commercial fruits and vegetables, Christmas trees, and forage crops. Also discussed were growing shiitake mushrooms, using regenerative agriculture, and marketing alternative crops.

"New ideas keep coming up as interest grows," Zarwell said. "This year, RC&D will help grow some amaranth, a plant with very high protein content. It looks like it has potential."

The RC&D has published a 109-page manual to help promote alternative crops. The manual, "Spotlighting Alternative Crops," provides information on how to grow and market about 20 vegetables, 3 fruits, 6 forages, 3 grain crops, and several specialty crops and herbs.

"The manual lists the alternative crops with the most potential for Iowa, but we think it can be applied from Ohio to Nebraska," Zarwell said. "It includes the shiitake mushroom, Christmas trees, popcorn, ginseng, amaranth, and many other alternative crops, and we think it will help any grower."

Interest has grown to the point that the Geode Specialty Growers Association has been formed. The association plans to staff an information center for high potential crops.

"The kind of interest we've seen in alternative crops in just 1 year makes me think the information center and our other seminars are something that will make a difference in our rural economy," Zarwell said. "It's an exciting concept to work with."

**Lynn Betts,**  
public affairs specialist, SCS, Des Moines, Iowa

## Meeting the Demand for Wildrice

Airboats and waders are some of the tools needed for a new agricultural industry in northern Idaho's Benewah County. The new industry involves harvesting and marketing wildrice.

Wildrice was introduced into this area 20 to 30 years ago to provide food and habitat for wildlife. It grows in wet areas around lakes and marshes. A few years ago the St. Maries Wildrice Growers Association was formed to begin harvesting the wildrice.

The wildrice is harvested using airboats with a trough on the front. Several passes are made and the ripe seed falls into the trough. The seed is then laid in windrows for a 3- to 10-day drying period. It is then parched, dehulled, graded, separated, and packaged.

Wildrice has been harvested commercially in other areas for a long time. Northern Minnesota is well known for its wildrice production. The wildrice grown near St. Maries, which is longer grained than the Minnesota variety, qualified for a premium rating. Its high quality commands a high price and has earned it a special niche in a rapidly growing market.

As demand and markets for this wildrice grew, the growers saw the need to expand. The expense of shipping the harvested rice to facilities in Minnesota for processing, however, was a major obstacle.

For assistance, the growers approached the Benewah Soil and Water Conservation District and the Idaho-Washington RC&D Area. They sought—and received—support in three areas: determining the potential environmental impacts of increased wildrice production on the water, soil, and wildlife; identifying sources of funding to build a local processing plant; and developing a new industry in a high unemployment area.

The appropriate State agencies, such as the Department of Fish and Game, the Department of Water Resources, and the University of Idaho Experiment Station at Sandpoint, were then asked to address the short- and long-term effects of increased wildrice cultivation. Their responses indicated that there didn't appear to be any significant adverse effects. In fact, wildrice cultivation could benefit wildlife.

The RC&D council set up meetings with local bankers and the Panhandle Area Council, an economic development agency in northern Idaho. Through these efforts, a corporation formed by the harvesters obtained the money to build the processing plant in the fall of 1984.

The new plant processed 60,000 pounds of wildrice during 1985, and the owners are considering expanding its capacity to handle 100,000 pounds. Together with the harvesting operation, it has created four full-time jobs and six to eight part-time jobs.

The wildrice is available in retail quantities locally and is marketed in large

quantities all over the country. Packaging, which is done at the plant, ranges from 8-ounce gift boxes and 25-pound buckets to 100-pound bags. Gourmet food consumers create the largest demand.

**Gerald T. Johnson,**  
RC&D coordinator, SCS, Coeur d'Alene, Idaho

## Developing the Missouri Bootheel

Missourians are developing the "Bootheel" region in the southeastern part of their State. The Bootheel, which contains 9.6 percent of the State's cropland, now produces 25 percent of the State's \$2-billion annual agricultural income.

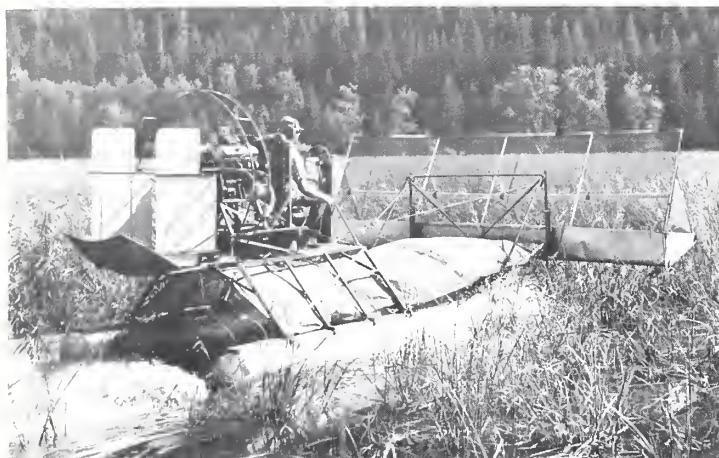
A good example of the development taking place in this area is the wine industry. A new million-dollar Bavarian-style winery along Interstate 55 near Benton is producing prize-winning wines.

In 1982, the Bootheel RC&D Council assisted the Moore-Dupont Company with the planning and conservation work to establish a new 85-acre vineyard of Catawba and French-American hybrid grapes. The company is now producing grape, apple, honey, and peach wines and has built a second winery near Springfield to produce champagne.

The original conservation work included a pond for water supply; a diversion to help fill the pond and reduce erosion; and contour grape plantings to get better air drainage and reduce erosion. The RC&D council located sources of rice hulls that are used in pressing grapes and apples. The company also purchases local honey.

The company's future plans include a tourist center to promote the local wine industry and a tasting gallery. The RC&D council is furnishing promotional assistance to attract more of the 2 million tourists traveling by yearly on Interstate 55. Many of those who stop for the winery will also spend money on other products and services in the Bootheel.

**James E. Callahan,**  
RC&D coordinator, SCS, Dexter, Mo.



Airboats are used to harvest wildrice in northern Idaho. Several passes are made, and the ripe seeds fall into the trough in front. A new plant has been built to process and package the wildrice for national distribution.

## Promoting Vermont

Tourism and agriculture in Vermont traditionally make strange bedfellows, but at the Green Trails Inn, Brookfield, the opposite holds true. Innkeeper Jack Russell encourages visitors to "stay another day" and partake of the "Vermont Experience." He invites the tourists to visit a family farm, hug a calf, and meet some very special people—Vermont farmers.

Working with the George D. Aiken RC&D Area and the local chamber of commerce, Russell and Dennis Borchardt, RC&D coordinator, have embarked on a marketing venture to sell Vermont—Vermont style. A video tape provided to area inns, campgrounds, information booths, and real estate offices, treats visitors to an overview of what the area has to offer.

"What we have attempted to do is take the mental picture that the world has of Vermont and capture it on tape," said Borchardt. The video, coupled with a self-guided tour brochure, encourages the visitor to "Stay Another Day"—the underlying theme of the campaign. Other promotional items include window stickers, placards, and T-shirts.

The "Vermont Experience" began in July of 1985 in the Greater Randolph Area—a group of villages in a central Vermont valley. Donations from prospective participants were solicited, and committees were formed to produce the video and brochure. The University of Vermont's Agricultural and Resource Economics Development Program provided technical help. USDA's Economic Research Service provided financial support. With volunteers doing the leg work, the entire package cost less than \$2,000.

If people are looking for discos, video games, hot tubs, paved roads, and a swinging night life, they won't find it here. "We are what we are and we're Vermont," said Russell. "And we don't offer anything except Vermont."

"We're providing a destination that has food, craft shops, and antique shops," Russell said. "But we've added another dimension to it and that's agriculture. We're providing the visitor with an opportunity to

experience the real Vermont. We attempt to get them out there—get them into the barnyard—walk, smell, and feel what the farmer does everyday."

Through direct contact with the farmers, the visitors learn of the hard work it takes to run a farm and of the troubles farmers are having. They also learn that farming is not without its humor. One gentleman, upon walking into a barn, exclaimed, "Why, I can tell they really keep this barn clean! It has a fresh ammonia smell."

More than 40 businesses in the area now participate, and more and more are expressing interest. The "Vermont Experience" is fostering civic pride and an interdependence among the local citizens. Cooperative efforts among townspeople helped generate a successful beautification project and merchants and businesses rely on each other's services, putting their money right back into the community.

For example, the Green Trails Inn, which serves 3,000 to 4,000 guests annually, buys eggs, dairy products, and maple syrup from local producers. Visitors go to local orchards to pick apples or buy fresh baked goods. Organically grown meat from Vermont is finding its way to other States because of visitors who tried it here, liked it, and now order it direct.

The "Vermont Experience" is a winner for the visitors, local businesses, villages and communities, and, of course, agriculture. It's also a way of saying, "This is our way of life. This is worth something. It's worth holding on to."

**Ann Dudas,**  
public affairs specialist, SCS, Winooski, Vt.

## Forming Haygrower Groups

Haygrower groups are blossoming in Iowa nearly as quickly as the alfalfa hay they grow and sell. Aided by RC&D areas, six multicounty haygrower associations are now in operation across the State.

It all started several years ago when the Pathfinder RC&D Council began looking for ways to stimulate the local economy. The council found that there was a market for top quality hay. In fact, when queried

by the RC&D council, several buyers wanted to take delivery of large quantities immediately. As a result, the council formed a steering committee that contacted buyers and encouraged hay growers in the area to organize.

The first haygrower group was formed in 1983 in Cantril. About 70 farmers, mostly from Van Buren County, agreed to a set of bylaws and called themselves the Southeast Iowa Haygrowers Association.

"Their goals as a group are the same as the individual farmers involved," said Dale Kraus, RC&D coordinator from Fairfield. "But as a group, they have a better chance of reaching them."

The Southeast Iowa group strives to (1) promote the production of high quality hay, (2) develop better markets for their hay and straw, (3) conduct educational programs and exchange information on growing and marketing hay, and (4) encourage more soil conservation by increasing hay acreage.

Hay acreage in Iowa has dropped by 30 percent in the past 20 years. Most of those acres have been converted to the cash grain crops of corn and soybeans.

"But if you'll manage hay as carefully as most farmers manage corn and soybeans, you'll get a decent profit," said Tom Spear, a Tipton farmer. Spear is chairman of the Eastern Iowa Hay Growers Association.

The Eastern Iowa group has a computerized listing of all members' hay, and encourages all members to get their hay lab tested for quality. "You really can't tell the quality of hay by looking at it. We want to develop a reputation for high quality hay, because it will sell," Spear said.

Spear and others would like to sell most of their hay within Iowa, but an increasing amount is going out of State. This year, their group had all their members' hay sold by Christmas, much of it to Wisconsin farmers who were hit with heavy snow in early winter.

**Lynn Betts,**  
public affairs specialist, SCS, Des Moines, Iowa

## Marketing New York Beef

More and better beef means more and better markets for beef producers in southwestern New York thanks to an RC&D Custom Feedlot Demonstration Project. The project showed producers they could improve their profits by offering animals of consistent quality in quantities large enough to attract buyers.

"New York has the land resources to grow quality beef," said Robert Yunker, chairman, Seneca Trail RC&D council, "and we're close to major northeast markets." Yet most beef that New Yorkers eat comes from the Midwest. Indeed, many New York calves are sold out of State to be returned later as higher priced, finished beef, ready for the supermarket. Meanwhile, New York producers are faced with low prices and uncertain markets.

The RC&D council surveyed 250 beef producers in Allegany, Cattaraugus, and Chautauqua Counties and found that a lack of marketing options and expertise were the biggest problems. Producers couldn't consistently supply enough animals at market-specified grades when needed. They had difficulty producing animals that met USDA grading standards. Many mismatched cattle type and feeding programs or purchased the wrong feed ingredients. The decision to sell was often triggered by the need for money or shortage of feed, leaving little time to find a good market or coordinate shipping to save costs.

Believing that these problems could be overcome, the RC&D council organized a Beef Marketing Action Committee. This committee, made up of local beef producers, decided to prove that local producers could finish their own feeder calves in a well-managed common feedlot and sell them profitably in groups as animals reached the proper market grade.

A local cash-crop farm was chosen as the feedlot site and a local producer's co-op was selected as the marketing representative. The New York Department of Agriculture and Markets provided a marketing specialist to advise on grading and marketing. Cornell University provided an Extension beef specialist to develop a

balanced feeding program to improve weight gains. A contract was drawn up for producers who wanted to finish cattle at the feedlot. Field days and information meetings were held at the feedlot with the help of Extension Service representatives.

The first group of 92 calves from nine producers was trucked to the feedlot in October 1983. The marketing specialist monitored progress and quality standards and determined when groups of cattle were ready for sale by the co-op. The results were encouraging. The cattle were sold at or above prices being paid in major cattle-feeding areas. On the average, producers received \$101 per head in value added due to the feedlot.

In 1984-85, about 135 calves were finished and sold through the feedlot. Even though beef prices were depressed nationally, feedlot participants received an average of \$73 more per head than they would have received without the feedlot program.

Ed Rayburn's experience illustrates what the feedlot project has meant to local beef producers. Rayburn, of Scio, runs a stocker cattle operation. He buys lightweight cattle in the spring and fall and sells them the following fall. Rayburn sold freezer beef for a while and was getting

\$1.35 per pound of cut, wrapped, and frozen beef. Through the feedlot, he can get \$1.05 per pound hanging weight—without the marketing and preparation costs involved.

The success of the custom feedlot project shows what local people can do with a minimum of money and a lot of initiative. The project succeeded because of the cooperative spirit among the producers who consigned cattle, the co-op, the feeder, and the Federal, State, and local agencies. The overall benefits from the project have been estimated at \$1.2 million, based on value added over the next 10 years.

In the future, the RC&D council expects to expand producer participation in the feedlot, and hopes to transfer responsibility for the program to the producer's co-op. The council is also sponsoring slaughter cattle and cull cow pools and is considering establishing a custom feeding program for lambs, modeled after the beef program.

**Dale Clark,**  
RC&D coordinator, SCS, Franklinville, N.Y.

**Jean Krebs,**  
information assistant, SCS, Syracuse, N.Y.



Pete Comerford, a livestock grading specialist with the New York State Department of Agriculture and Markets, grades a yearling feeder calf entering the RC&D demonstration feedlot. The calf has just been weighed and will be weighed again when it is sold for slaughter in 140 to 180 days.

Photo by Karen Rusinski,  
audio-visual production  
specialist, SCS, Syracuse,  
N.Y.

# Nevada Farmers Make Irrigation Systems Work Smarter

In Nevada, municipal, industrial, and other nonagricultural users compete with farmers and ranchers for limited water supplies, especially in the rapidly growing southern and western parts of the State.

"The availability of water is a major factor limiting growth in Nevada," said Gerald Thola, Soil Conservation Service State conservationist in Reno. "With irrigation efficiencies in most of the State at less than 50 percent, farmers and ranchers must begin using water more efficiently."

In 1981, the U.S. Department of Agriculture's Soil Conservation Service and Agricultural Stabilization and Conservation Service (ASCS) began targeting technical and financial assistance to Nevada's major cropland areas irrigated by pumped groundwater and regulated streamflows.

## Border Irrigation

Humboldt County is one of the areas being targeted for water conservation assistance. Average annual precipitation is 8 to 10 inches, and in some areas only 5 to 8. Irrigation provides almost all of the water for crops, and 80 percent of irrigation water comes from snowmelt. This usually runs out by July, and farmers begin pumping groundwater. In dry years, the water table falls below the reach of some pumps and they have to be lowered.

Many farmers in the county use center pivot irrigation systems. These are expensive to operate because of high energy costs and inefficient because of water loss to wind and evaporation. "Pivot systems were originally designed to provide supplemental irrigation, not all of a crop's water needs," said Terry Berogan, former SCS district conservationist in Winnemucca, Nev., and now SCS State information resources management coordinator in Bismarck, N. Dak.

"Farmers in Humboldt County need to apply 4 inches of water per irrigation, but pivots are designed to provide only 1 to 2 inches," said Berogan. "Border irrigation systems can be managed at up to 90-percent efficiency while most pivots in the area operate at 65 percent."

"Converting to a border irrigation system is really the best way to go," said Berogan.

"But where farmers can't afford to switch, or won't, there are ways to make pivots more efficient. One way is to convert to a low-pressure, dropped-line sprinkler system which greatly reduces the amount of water that is lost to wind and evaporation."

"Farmers can apply the same amount of water to a smaller area more efficiently," said Berogan. "Since bigger drops of water can cause soil erosion problems on some fields, it's important for farmers to seek technical assistance before altering their pivot systems."

"Another way farmers can make sure their pivots are doing a good job is to ask SCS to do an irrigation evaluation," said Christian Pacheco, SCS soil conservationist at Winnemucca. "We set out rain gauges in the field to catch the water from pivots, record how much was collected in each, and enter that and other data into a computer program back at the office. It calculates the pattern efficiency, application efficiency, and system efficiency. From this we can determine if there's a problem that the farmer needs to correct, such as a worn nozzle."

## Irrigation Scheduling

As part of the targeting effort in Nevada, SCS is also helping farmers to determine an irrigation schedule that will provide the most benefit to their crops from the irrigation water applied.

One farm that's becoming more water

efficient with assistance from SCS and ASCS belongs to Dave and Tom Cassinelli, who grow alfalfa for their cow/calf operation at the foot of the Santa Rosa Mountain Range near Winnemucca. Tom Cassinelli is chairman of the Paradise Valley Conservation District board. Dave is on the Humboldt County ASCS committee.

The Cassinellis began upgrading the irrigation system on their farm when they took it over in 1970. SCS provided them technical assistance in leveling 75 acres and installing a border irrigation system that's supplied by snowmelt. ASCS provided cost sharing on installing the pipelines. A pivot system provides supplemental irrigation. The Cassinellis are using center pivot irrigation on another 135 acres of alfalfa, and SCS staff from the Winnemucca field office are evaluating its efficiency.

"Water is king," said Dave Cassinelli. "Around here, if you don't have water, you don't have anything. USDA targeting efforts are good because water is short, and we can't afford to keep using it at 50-percent efficiency."

Frosty Tipton, a board member of the Sonoma Conservation District in Humboldt County, requested SCS assistance in laser leveling 122 acres of rented land and installing a border irrigation system before he began production. "I wanted to start out right," said Tipton.

The system has 64 borders and uses buried pipe and risers. Tipton irrigates one

SCS conservationists Terry Berogan, left, and Christian Pacheco read and record the amount of irrigation water collected in rain gauges after a center-pivot irrigation on an alfalfa field. The farm is at the foot of the Santa Rosa Mountain Range in Humboldt County, Nev.



Photo by Dan Himsworth, public affairs specialist, SCS, Reno, Nev.

border at a time on an 18-day cycle. The system pumps about 1,200 gallons a minute. He grows alfalfa and oats together, harvesting the oats first and then the alfalfa. He uses rye for a cover crop.

SCS used a computer program to figure the border width and length that would work best.

#### Ditch Lining

The area served by the Truckee-Carson Irrigation District in Churchill County is one of the biggest cropland areas in the State. With an average rainfall of a little over 5 inches a year, cropland operations depend heavily on irrigation.

There are about 73,000 acres of irrigable land with water rights in the irrigation district and about 2,000 water users. Irrigation water comes from the Carson River.

All irrigation in the district is surface irrigation done through a system of canals and ditches. When farmers decide their crops need water, they contact the irrigation district, which puts their request in line with others. The district calls farmers, often in the middle of the night, to tell them when to open their gates.

Many farmers in the area grow alfalfa in rotation with small grains, wheat, barley, and corn in 6- to 8-year rotations. Many younger farmers are moving into row crops—corn, melons, garlic, potatoes, and onions—for higher profits.

Amelio Bell operates his 540-acre Santa Gertrudis Ranch near Fallon. He grows alfalfa for hay and small grain and operates a feedlot.

Over the last 6 years, with SCS technical assistance, Bell has laser leveled a field a year and lined about 5 miles of irrigation ditches with concrete.

Bell estimates that on the finished fields he has reduced the time it takes to irrigate by half. He says that it used to take 36 hours to irrigate 196 acres and now it only takes 18.

Bell says that he is using the same amount of water but instead of irrigating every 21 days, he is irrigating every 12 to 13. He's getting more irrigations, but doing it in less time and at less cost.

Another Churchill County farmer, Ted

Workman, irrigates about 85 acres of a variety of row crops. He grows cantaloups, cucumbers, watermelons, pumpkins, squash, sweet corn, tomatoes, peppers, beans, and other food crops. Workman also grows a little hay. He rotates the row crops with alfalfa every 6 or 7 years.

Just about all of Workman's irrigation ditches are concrete lined. "I have to manage every drop of water carefully," said Workman. Vegetable crops are very sensitive to long dry spells. Workman has been experimenting with catching small amounts of subsurface drainage in subsurface lines and reusing it to run sprinklers to supplement his border system.

#### Managing the Delivery System

In Lyon County, another targeted area, about 80 percent of the water used for irrigation comes from snowmelt from the eastern slopes of the Sierra Nevada Mountains. The snowmelt flows into the Walker River and is delivered to irrigators through a maze of canals and ditches.

In 1949, the Walker River Irrigation District was supplying water to irrigate 50,000 acres and now it's supplying water for close to 80,000. Farmers used to cut two crops of hay and now they're cutting four.

The irrigation delivery system has developed haphazardly over the years. Ditches run parallel to each other for long stretches and cross at many points. As much as 35 percent of water released at the main turnout is lost before it reaches farmers' ditches. Sediment accumulating in the river bed and in onfarm ditches is a growing problem.

Lyon County, the Mason Valley Conservation District, and the Walker River Irrigation District are sponsoring a Public Law 83-566 small watershed project to help solve these and other problems. SCS has approved the East Walker project for planning.

"Current plans include combining five delivery ditches into one and lining it with concrete," said Bill Frade, chairman of the East Walker watershed project steering committee and a member of the Lyon County ASCS committee. "This will cut a 60-mile delivery system almost in half and reduce many problems with sediment.

"After the main delivery systems have been improved, farmers will be encouraged to improve their onfarm systems," said Frade. "Many farmers have already begun to improve their onfarm irrigation efficiency by laser-leveling fields and lining ditches with concrete."

"We're trying to get a tighter rein on the

Combining parallel irrigation ditches like the ones at right and left of the photo is one way that local sponsors of the East Walker River Public Law 83-566 small watershed project in Lyon County, Nev., plan to make irrigation water use more efficient.



Photo by Dan Himsworth, public affairs specialist, SCS, Reno, Nev.

whole irrigation system," said Vince Dye, a conservation district director on the Mason Valley Conservation District board and chairman of the steering committee for the East and Main Walker river basin study.

SCS District Conservationist John Schelling in Yerington said that SCS is providing technical assistance on the installation of onfarm settling ponds where sediment can settle out of irrigation water before the water is applied to fields. This practice helps keep sediment out of irrigation ditches and preserves the land leveling that was done.

"Irrigation water is supplied on demand," said Schelling, "and most farmers order water from the irrigation district about every 20 days without checking to see how much water is still available in the soil for crops. We're beginning to work with individual farmers on measuring soil moisture to set up an irrigation schedule based on a crop's water needs."

SCS Civil Engineer Roberta Lewis is making an irrigation evaluation on Dye's and other farmers' fields with a neutron probe. Lewis takes moisture readings at various depths before and after irrigation and monitors soil moisture weekly. On Dye's field she monitored three sites on one border in three different soils. This helps to judge the uniformity of water application in the border. The data collected can be applied to other areas of the same soil under similar conditions.

"If farmers can save an irrigation early in the year through proper scheduling," said Schelling, "there might be more water available later in the season, preventing the need to draw on underground supplies."

Since 1981, these conservation-minded farmers and ranchers and many others in Nevada have conserved almost 84,000 acre-feet of irrigation water with SCS and ASCS targeted assistance.

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## Pilot Projects Succeed in Land Use Conversion

Converting erodible cropland to pasture or forest land can substantially reduce soil erosion at a low cost to the Federal Government.

In three pilot projects begun in 1983, conservation districts have helped 140 farm operators to convert 14,263 acres of cropland to pasture or forest land. Early results from these projects show an average of 25 tons of soil saved per acre per year at an average cost of \$1.16 per ton.

The projects are managed by the governing boards of the local conservation districts in Pike County, Ala.; Bonneville and Bingham Counties, Idaho; and Stanley County, S. Dak. They are funded by the Soil Conservation Service through the Soil and Water Resources Conservation Act of 1977.

Many features of these projects are similar to those now being implemented by the Conservation Reserve Program as part of the Food Security Act of 1985. Farmers participating in the projects received technical assistance, cost-sharing funds, and an incentive payment if they agreed to retire their highly erodible cropland and keep it in a protective cover of grass or trees for a minimum of 10 years.

Unlike the Conservation Reserve Program, the projects did not require competitive bids from the farmers. Each district decided how much it would offer farmers to participate. All of the districts decided on a flat incentive payment equal to approximately half of what it would cost to rent the cropland for 1 year. The total payments ranged from a lump sum of \$20 per acre in Alabama to \$105 per acre spread over 3 years in South Dakota.

Other costs also varied. Tree planting in Alabama was least costly because little or no land preparation was necessary. Establishment of grass varied with such things as the cost of the seed (native versus tame), land preparation, liming, fertilization, and weed control. In some areas conservation structures were necessary to control gullies. Overall, the average cost for the full 10-year period is

projected to be less than \$30 per acre per year.

Participants in the projects are mostly owner-operators who make their primary residence on the farm. The farms vary in size and type. In Alabama they range from very small farms to large plantations that produce peanuts, soybeans, livestock, and trees. In Idaho and South Dakota the farms are primarily large cash grain operations.

To be eligible for the conversion projects, cropland had to be in capability classes III through VIII. Each district used its own criteria for determining which of the eligible cropland was most in need of conversion and gave priority to the land most in need. More than 60 percent of the cropland enrolled in the projects had been eroding at more than four times the rate considered the maximum acceptable (T-value).

According to project managers, many farmers found it difficult to commit land for 10 years and cited the current farm economy as the reason. A common concern was that grain prices might increase significantly while they had all or some of their available cropland tied up in grass or timber. Many farmers were also concerned about maintaining the minimum acreage of commodity crops to qualify for USDA price-support programs.

To minimize any loss of income to the participating farmers, the projects placed no restrictions on the use of the converted land provided that the farmers maintain adequate plant cover. As a result, many of the farmers graze livestock and harvest hay on their new grasslands.

SCS personnel developed the contracts and provided technical assistance, but the projects were administered—efficiently and at a low cost—by the districts. This local control enhanced community support for the conversion projects and suggests that local conservation districts can play an important role in the nationwide Conservation Reserve Program.

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# Meetings

July	7-11	Izaak Walton League of America, French Lick, Ind.
	27-31	International Symposium on Grass Systematics and Evolution, Washington, DC
	27-31	National Association of County Agricultural Agents, Colorado Springs, Colo.
	27-31	National Federation of Business and Professional Women's Clubs, Milwaukee, Wis.
August	3-6	Soil Conservation Society of America, Winston-Salem, N.C.
	10-14	American Institute of Biological Sciences, Amherst, Mass.
	10-16	International Congress of Ecology, Syracuse, N.Y.
	13-16	American Horticultural Society, San Francisco, Calif.
	17-20	Association of State and Interstate Water Pollution Control Administrators, Superior, Wis.
	24-28	National Farm & Power Equipment Dealers Association, Reno, Nev.
September	11-17	North American Association for Environmental Education Conference, Eugene, Oreg.
	14-16	World Fertilizer Conference, San Francisco, Calif.
	14-18	American Fisheries Society, Providence, R.I.
	22-24	National Water Well Exposition, Kansas City, Mo.
	24-26	National Waterways Conference, New Orleans, La.
	28-30	American Land Resource Association, Washington, DC
October	5-8	Society of American Foresters, Birmingham, Ala.
	5-9	Water Pollution Control Federation, Los Angeles, Calif.
	8-12	National Association of Biology Teachers, Baltimore, Md.
	17-21	Farm and Industrial Equipment Institute, Nashville, Tenn.
	21-24	Natural Areas Conference, Potosi, Mo.
	27-31	American Society of Civil Engineers, Boston, Mass.
November	5-8	North American Lake Management Society, Portland, Oreg.
	9-11	American Society of Farm Managers and Rural Appraisers, Reno, Nev.
	9-11	National Association of State Universities and Land-Grant Colleges, Phoenix, Ariz.
	9-12	National Forest Products Association, New Orleans, La.
	10-13	Geological Society of America, San Antonio, Tex.
	10-16	National Grange, Madison, Wis.
	13-15	Future Farmers of America, Kansas City, Mo.
	30-Dec. 5	American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, New Orleans, La.
December	3-5	Western Forestry Conference, Vancouver, British Columbia, Canada
	3-6	Keep America Beautiful, Washington, DC
	6-10	National Urban Forestry Conference, Orlando, Fla.